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DIMENSIONS OF ACHIEVEMENT-RELATED BEHAVIOR AMONG LOWER-CLASS NEGRO PARENTS.

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A STUDY OF ACHIEVEMENT-RELATED BEHAVIOR SOUGHT TO IDENTIFY PARENT BEHAVIOR AS A SOURCE OF VARIANCE WITHIN A HOMOGENEOUS GROUP OF CHILDREN. SUBJECTS WERE 72 SETS OF NEGRO PARENTS OF FIFTH-GRADE CHILDREN IN A PREDOMINANTLY LOWER-CLASS NEGRO SCHOOL. THE INTERACTIONS OF PARENTS AND CHILD AS THE YOUNGSTER SOLVED EIGHT TASKS WERE OBSERVED IN THE HOME BY TWO INVESTIGATORS. THE TASKS INVOLVED VERBAL VS. NONVERBAL RESPONSES, AND "CONVERGENT" AND "DIVERGENT" THINKING. PARENTAL BEHAVIOR IN HELPING THE CHILD WITH THE PROBLEMS WAS MEASURED BY RATING SCALES SCORED INDEPENDENTLY BY EACH OF THE OBSERVERS. ANALYSIS OF DATA ISOLATED A DIFFERENT FACTOR STRUCTURE FOR MOTHERS AND FATHERS AS WELL AS DIFFERENCES IN THE PATTERNING OF RELATIONSHIPS BETWEEN COMPARATIVE FACTORS. THE SEX OF THE CHILD APPEARED TO BE AN IMPORTANT DETERMINANT IN THE RELATIONSHIP BETWEEN MOTHER FACTORS BUT NOT BETWEEN FATHER FACTORS. IT WAS ALSO FOUND THAT THE RELATIONSHIP BETWEEN THE CONDITION OF THE APARTMENT AND FACTOR SCORES WERE CONDITIONED BY THE SEX OF THE PARENT AND THE SEX OF THE CHILD, AND THAT THE LEVEL OR SCORE ON SOME OF THE FACTORS WAS SIGNIFICANTLY INFLUENCED BY THE CHILD'S SEX. THESE FINDINGS APPEAR TO SUPPORT THE IDEA THAT "SITUATION IS A SIGNIFICANT DETERMINANT OF FACTOR STRUCTURE" FOR CERTAIN KINDS OF FACTORS. (NH)

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DIMENSIONS OF ACHIEVEMENT-RELATED BEHAVIOR AMONG LOWER-CLASS NEGRO PARENTS

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The assumption that human behavior can be usefully described and analyzed in terms of certain basic dimensions, patterns or styles has long been a central one in social science theorizing. Research attempts to identify or verify such dimensions or patterns have been carried out on occupants of a number of different social roles, including leaders (Halpin and Winer, 1952; Selvin, 1960), teachers (Medley and Mitzel, 1959; Solomon, Bezdek and Rosenberg, 1964), group members (Mann, 1961; Borgatta, Cottrell and Mann, 1958), children (Richards and Simons, 1941; Longabaugh, 1966) and parents (Schaefer and Bayley, 1960; Crandall and Preston, 1955).

The dimensions which are found in such research are usually considered to reflect general behavioral characteristics related to the role under study, relatively uninfluenced by differences in settings or situations of role performance. Indeed, several attempts have been made to derive basic and general dimensions of human behavior which are equally applicable to all roles and situations (Foa, 1961; Leary, 1957; Schutz, 1959). While such attempts are impressive and provocative, the possibility that there may be differences in the basic structure of behavioral dimensions which are related to differences between situations has not been sufficiently explored, although the study by Mann, mentioned above, provides some empirical evidence that situational variations do effect differences in behavioral factor structures of group members.

The purpose of the present study is to identify dimensions of parental behavior with specific relevance to children's school achievement and achievement behavior. Since we believe that situation is probably an important determinant of the structure of behavioral dimensions, it seemed reasonable to make use of the type of situation which seemed most likely

to evoke parental behavior influential to the child's achievement dispositions; the parents were observed watching and helping their child while the child was attempting to succeed with a series of intellectual tasks.

If there are broadly applicable general dimensions of human behavior, they should emerge with this approach as well as any other; if there are alternate or additional dimensions which have particular and limited relevance to achievement-related situations, the present approach should bring them out as well. Similar experimental situations have been used by Rosen and D'Andrade (1959) and by Hess and Shipman (1965) in studies not focused on identifying significant dimensions of parental behavior.

The present research is concerned specifically with the achievement-related behavior of lower-class Negro parents. The strategy of the general project of which this report constitutes one part is to attempt to identify sources of variance upon children's achievement within this group, rather than to compare the achievement of the group as a whole with that of other groups. Parent behavior is assumed to be one very important source of this variance. Identifying significant and relevant dimensions of parental behavior is the first step toward testing this assumption.

METHOD

Subjects

The Ss were 72 sets of parents of fifth grade children (38 boys and 34 girls) from one school in a section of the west side of Chicago populated predominantly by lower class Negroes. The median income for families in this neighborhood was $4860 in the 1960 census, and the neighborhood does not appear to have changed substantially since that time (data for this study were collected in the spring of 1965). All families included in the study were intact two-parent families, although 3% of the mothers

and 24% of the fathers were step-parents. (About 66% of the children in the total 5th grade at this school lived in comparable two-parent families.) The birthplace of 87% of the mothers and 90% of the fathers was the South. Mean number of children per family was 5.37 (s.d.: 2.70).

Of the 78 sets of parents initially contacted and asked to participate in the study, five (6.41%) refused or could not make the necessary arrangements. One other family was lost to the study because of a tape-recorder failure during the interaction session.

General Procedure

Each set of parents was observed in interaction with one child in a session in their home lasting between one and a half and two hours. Family visits were made by teams of two Es. There were two such teams; each visited a different set of families. All Es were white, middle-class males. A card table and chairs were set up, usually in the living room, with the child and one experimenter sitting at the table across from each other, and the two parents at the other two sides of the table, across from each other. An omnidirectional microphone, attached to a tape recorder, was placed at one corner of the table. The following instructions were then read:

> We are interested in learning how children work at different kinds of problems and how this relates to their work in school. We hope that what we learn from our visits will give us ideas about ways to help children do better in school. We also want to see how well children do on these problems when their parents are present as compared with other times when their parents are not present.
>
> Tonight we would like _____ to work at a series of seven problems.

Because some of these problems will take long answers, we would like to tape record this session rather than try to write down everything _____ says. If you would like it, after the session we will play back parts of the tape so you can hear yourselves talking.

Now we are ready to start the problems. Some of these problems are quite difficult, and _____ may need some help. Because of this, we would like both of you to give him (her) any kind of help, at any time, that you think will let him (her) do as well as possible. This goes for all the problems we will have. We want to see how well _____ uses the help he (she) is given, as well as how he (she) tries to solve the different problems.

The Tasks

There were eight tasks in all. (The instructions to the parents mentioned only seven because one was not defined to them as a "task".) The first six of these varied according to two dimensions assumed to be important to different types of academic achievement; the requirement of verbal versus non-verbal responses to complete the task, and the requirement of "convergent" versus "divergent" thinking to produce appropriate responses (from Guilford, 1956). After these six tasks were completed, the experimenter said, "We have one more task which will take a little time to get set up. While we are doing this, here are a few things you can look at." He then placed several objects on the table, including a kaleidoscope, a pair of magnets, a radiometer and some anagrams, and then left the table for approximately four minutes. The purpose of this task was to investigate the parents' encouragement of curiosity, interest

and restrictiveness in a relatively undefined situation. The final task involved experimental manipulation of the child's success and failure, and observation of the parents' reactions to this.[1]

Descriptions of the first six tasks follow (in the order in which they were presented):

Task 1. Map problem (Nonverbal, convergent). - A map, drawn on a piece of cardboard about two feet square was laid on the table, facing the child. Roads were drawn in three colors, representing three different maximum speeds. These roads were interconnected in various ways; also some sections were curved while others were relatively straight. The child was told to select two routes connecting a point in the upper left corner with a point in the lower right corner, the first to be the quickest route and the second the shortest route.

Task 2. Similarities and Differences (Verbal, divergent). - Two colored photographs of different sections of the Chicago waterfront were presented to the child. He was initially asked to name as many similarities as he could between the two pictures in three minutes. After this was done, he was given another three minutes to name as many differences as possible between them.

Task 3. Cars (verbal, convergent). - Ten small pictures of cars of varying ages were spread out on the table and arranged in a standard random order. The child was asked to arrange them in order of age, starting with the oldest, and to give reasons for each placement.

Task 4. Rig-A-Jig (Nonverbal, divergent). - A small box containing plastic pieces which fit together in various ways was put on the table. After demonstrating the ways of connecting the pieces, and showing pictures of some finished constructions, the experimenter told the child to "build

things" for six minutes.

Task 5. Card sorting (Nonverbal, convergent). - Sixteen cards were spread out on the table in a standard random order. On each card was a figure representing a combination of four dimensions - shape, color, border design, and internal design. The instructions were to "put them into four rows, with each row made up of four cards that belong together in some way." On the first trial, a set of cards was laid out such that a correct solution could be had only by sorting according to "shape." A second trial required a solution according to "borders".

Task 6. Consequences (Verbal, divergent). - This task was derived from Guilford (1952). The child was told to imagine that suddenly everything made of wood turned to rubber and everything made of rubber turned to wood. Five minutes were given for him to state as many possible consequences as he could.

If the parents were not participating at all, they were reminded, between tasks, that they could give the child as much or as little help as they liked.

Measures of Parental Behavior

A combination of techniques was used to measure parental behavior, including observer ratings and tallies of specific occurrences of various categories of verbal and nonverbal acts. Description of the instruments follows:

Global rating scale. - This instrument contained 13 unipolar items which referred to behavior produced throughout the session. Both experimenters in the visiting team made ratings with this instrument shortly after the conclusion of the session. Each item was rated on a six-point scale. Among these items (which were derived, generally, from the child-

rearing literature, literature on determinants of achievement in children, and our own theoretical orientations concerning parental behavior of importance to achievement) were: understanding of child, energy, amount of positive emotionality, amount of negative emotionality, encouragement of independence, concern with quantity of output, concern with quality of output, interest in tasks, interest in child's performance.

Teacher behavior rating form. - This instrument, originally developed to rate teacher behavior, was used in this study because the parents were being observed in a quasi-teaching situation. It contained sixteen variables derived from prior factor-analytic studies of teacher behavior (Ryans, 1960; Solomon, Bezdek and Rosenberg, 1964; Solomon, 1966). All were bipolar items constituting five-point scles. Eleven of these were considered appropriate for use with parents in this situation. Typical items were: permissive-controlling, ambiguous-clear, warm-cold, rigid-flexible, approving-disapproving, disorganized-systematic, use of humor-no use of humor. These items also referred to behavior during the entire session, and were also made by both experimenters after the conclusion of the session.

Specific task ratings. - At the conclusion of each of the first six tasks, both experimenters rated each parent on two variables: the amount of interest which the parent had shown in the task per se, and the amount of encouragement given to the child by the parent. Each of these ratings was made on a six-point scale. Another set of four ratings was made at the conclusion of the Interim Task by each experimenter, also on six-point scales, referring to the behavior of each parent during that task. The items were: interest, encouragement of independent exploration, restricting behavior, and attempts at explanation or teaching.

Verbal interaction scoring system. - Tape recordings were made of each of the family sessions. The speech of each family member was later coded according to an interaction scoring scheme containing 32 categories. Twenty-five of these formed a mutually exclusive system, with the Bales (1950) categories as nucleus, plus several additional ones representing more specific aspects of parental behavior which were considered likely to be relevant to the achievement situation. Included in these additional categories were five which referred to answers or hints given with different degrees of completeness and abstractness, and several which referred to specific attempts to improve the child's performance (including gives encouragement, offers reward, urges speed, threatens punishment, and urges careful deliberation.) Another seven categories were not part of the mutually exclusive set, but referred to other aspects of behavior thought to be important. These included statements which indicated positive or negative expectations concerning the parent's own abilities or the child's abilities, statements giving positive or negative feedback to the child about his performance, and statements indicating a desire to stop work on a particular task.

The tapes were scored in one-minute units. Every category in the 25-category set which had occurred during a minute unit was scored once for that minute, but not more than once. Categories in the additional set of seven were scored separately in the same manner. Separate scores were computed within each task for all categories. These scores consisted of the percentage of minute units within a task during which a given category occurred.

Nonverbal interaction scoring system. - Nonverbal behaviors of the three family members were scored by the second E who was sitting unobtrusively some distance from the table. Categories in this system were

gross and relatively easily identifiable. Included were glances from one family member to another (each scored separately), smiles, frowns, pointing at the task materials, manipulating the task materials, communicating that something has been done correctly (by nodding, hand clapping, etc.), communicating that something has been done incorrectly (by shaking head, raising eyebrows, etc.), and withdrawing from the situation (leaving table, looking out the window.) This system was scored in units of 15 seconds. The observer watched the interaction for 15 seconds, then made a tally for each category which had occurred during the period. When the tallying was completed, another 15 second observation period was started. Each category was assigned a score for each task, which was the percentage of the total units within the task during which it had appeared.

Reliability

Rating scales. - Every rating of parental behavior was made independently by two Es. The ratings were later discussed by the Es so as to maintain a consistent set of definitions, but no changes in ratings were made. Correlations were run between the two experimenters' ratings within each team for each of the four sets of ratings done on each parent. Because we planned to use sums across the two Es in further analyses, the Spearman-Brown formula for computing the reliability of a test of doubled length (Guilford, 1954, p. 354) was applied to all inter-rater correlations.

Generally, inter-rater reliability was lowest for the Teacher Behavior Rating Scale. Three items from this instrument were eliminated; two because they showed no reliability coefficients above .60 (sensitive-insensitive and impersonal-personal) and one (ambiguous-clear) because it was essentially identical to a more reliable item from the Global Rating Scale (clarity of communication.) The remaining eight Teacher Behavior

Ratings showed the following distributions of inter-rater reliability: Team 1 ratings of fathers produced coefficients ranging between .46 and .80, with the median at .74; team 1 reliability coefficients for mothers ranged between .04 and .72, with median at .42; team 2 coefficients for fathers ranged between .61 and .86, with median at .72; and team 2 coefficients for mothers ranged between .15 and .82, with median at .57.

The following distributions of reliability coefficients were found for the Global Rating Scale: Team 1 fathers - range: .46 to .87; median: .69; team 1 mothers - range: .31 to .83; median: .55; team 2 fathers - range: -.08 to .92; median: .58; team 2 mothers - range: .08 to .86; median: .70.

Reliability coefficients for the task-specific ratings of interest and encouragement (computed separately for each task) ranged between -.02 and .92, with the median at .78.

Two items from the Interim Task ratings were eliminated because of lack of variation and consistently low reliability. The two remaining items (interest, and attempts at explanation or teaching) had reliability coefficients ranging between .66 and .92, with the median at .82.

Interaction categories. - Tape recordings of the interaction sessions of 15 randomly selected families were independently scored by two coders. It was found that 15 of the categories had a mean occurrence of less than once per parent per session. These categories were excluded from further analyses.

For each of the remaining 17 categories, the proportion of true population variance was computed as an estimate of the reliability, according to formulas in Lindquist (1953, pp. 375-381). This involved a two-way analysis of variance with one replication (2 coders by 15 subjects,

with no within component.) The proportion of true population variance was defined as the population estimate of the variance contributed by subjects divided by the total variance (including that contributed by the coders). For fathers, these proportions ranged between .39 and .92, with the median at .72. For mothers, the range was between .21 and .86, with the median at .76. All 17 of these categories were retained in further analyses.

Coding of the non-verbal behaviors was done during the session by the second experimenter. Because there was no opportunity for an independent assessment by another coder, no reliability assessment of the nonverbal interaction categories was made.

Correction for Team Effect

In order to determine whether some of the behavioral differences between families might be attributed to differences in style of conducting the sessions between the two experimenter teams, a series of t tests was run on 15 variables, selected randomly from a total of 50. The same 15 variables were used for both mothers and fathers, making a total of 30 between-team comparisons. These comparisons were complicated by the fact that 18 families in a subsample selected for use in conjunction with another study had all been visited by the same team. Children in these 18 families were found to score significantly higher than those in the rest of the sample on Lorge-Thorndike IQ Tests and California Achievement Tests. Children in the remaining families (exclusive of the subsample) were found not to differ on these criteria between teams. When the parent behavior variables for the subsample were compared with those for the other families visited by the same team, 6 of the 30 variables showed differences at less than .10 level; indicating that the achievement differences related to

differences in parent behavior. It was felt that the most accurate test of the team effect, independent of the effect of achievement differences, would be to compare the families visited by the two teams not including the subsample. The resulting groups contained 22 and 32 families. Between these groups, four differences were found at the .10 level out of the 30 comparisons, slightly better than chance expectation.

Although the team effect thus seemed to be only slight, it was decided to attempt to partial it out. A regression analysis was done, predicting each of the parent behavior variables from the team variable for the 54 families exclusive of the subsample. The regression coefficients were applied to the total sample (72) to get predicted scores on each variable. These were then subtracted from the original scores to get residual scores independent of the team effect. The subsample families were excluded from the regression analysis so that the regression coefficients would reflect only team differences, unconfounded by the effects of the achievement differences between the subsample and the rest of the sample. Applying the coefficients to the total sample assumes that the team effect is similar within the subsample to what it is in the rest of the sample. The residual scores thus obtained were used in all further data analyses reported in this paper.

RESULTS AND DISCUSSION

Scores were derived from each parent behavior instrument. For the Global Rating Scale, the Teacher Behavior Rating Scale, and the Interim Task Ratings, these scores were the sums of the ratings made by the two observers on each of the retained items. Scores used from the task-specific interest and encouragement ratings were sums across both raters and all six tasks. For the verbal and nonverbal Interaction Scoring Systems,

the scores used were average percentages of occurrence of each item per task. After elimination of the least reliable items, 50 remained; these included 13 from the Global Rating Scale, 8 from the Teacher Behavior Rating Scale, 2 from the Interim Task, 17 from the Verbal Interaction Scoring System, 8 from the Nonverbal Interaction Scoring System, and 2 from the task-specific ratings.

Factor Analyses of Parental Behavior

Separate factor analyses were done on mother and father scores,[2] Communality estimates were squared multiple correlations of each variable with all other variables; these replaced the diagonal elements of the correlation matrices. Twelve principal axis factors were generated for both mothers and fathers. The Kaiser-Dickman binormamin criterion of oblique simple structure was used to rotate the factors (Harman, 1960, p. 326). By the criterion of a minimum eigenvalue of 2.0, five factors would have been rotated for both mothers and fathers. But the fifth mother factor was found to be unique, so four factors were rotated and retained for mothers, five for fathers. These accounted for, respectively, 60.95 and 64.57 percent of the total variances.

Mother Behavior Factors

Factor loadings and communalities for all items in the mother behavior factor analysis are presented in Table 1. Interpretations of each factor follow.

I. Direct, simple participation. - All of the items with high loadings on this factor involve verbal or nonverbal interaction categories, with the exception of one item from the Global Rating Scale, participation. This participation is judged to be "direct" because of such items as manipulates, points, and gives opinion. It involves direct contact with

Insert Table 1 about here

the task materials and direct attempts to solve the problems. The judgment that this participation is "simple" is influenced mainly by the highest loading item, nonverbal concrete help, referring to a verbal accompaniment to a manipulation or gesture indicating a specific and limited aspect of the task stimuli. Another item from the interaction system which has a fairly high loading on this factor also refers to "concrete" help. One other element which appears to be represented in this factor has not been included in the title, an element which might be called "negative reactions". In our judgment it is outweighed by the other elements.

II. Encouragement of independent achievement efforts. - The strongest element apparent in the high-loading items on this factor is "encouragement". Several direct assessments from different instruments appear here, as well as certain related variables such as requests suggestion, agrees, and positive feedback. The notion of "independence" occurs directly in one item, but is also evident in several items which seem to imply that the task activity is being done mainly by the child.

III. Warmth. - This is actually a bipolar factor, the items showing an approximately equal distribution between positive and negative loadings. Warm-cold has the highest loading, but the other items here are quite consistent with this interpretation.

IV. General interest. - The two highest items on this factor are both from the Interim Task, but the other loadings are consistent with them. While a number of elements seem to be included in this factor, "interest" is the strongest. It is called "general" because it contains

items which reflect interest in the tasks per se as well as those which indicate interest in the child or his performance. The other elements which appear here include control, abstractness of verbal help, and energy.

Father Behavior Factors

Father behavior factor loadings for all items are presented in Table 2.

I. Encouragement of independent achievement efforts. - While this factor is not identical to the mother factor to which the same name was

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Insert Table 2 about here

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given, enough of the same items appear strongly on both factors that this title seemed appropriate in both instances.

II. General verbal participation. - All of the high loading items on this factor are from the verbal interaction scoring system, and only a few of the verbal items score substantially on other factors. Furthermore, there does not appear to be any consistent quality or type of verbal participation represented in these items; they are similar only in that they are verbal. The possibility exists that this factor represents to some degree an instrument artifact. However, the fact that no such instrument-limited factors appeared in the mother factor analysis would seem to argue against this possibility, since the same instruments, measurement techniques, and raters were used in obtaining both the mother and the father data.

III. Geniality. - The interpretation of this factor is determined primarily by the three highest loadings: use of humor, smiles and laughs. It is differentiated from the mothers' Warmth factor by the absence of the

two items which were most important to that factor, warm-cold and approval-disapproval. The absence of these items gives the father factor a more impersonal quality, a kind of uninvolved good humor. "Geniality" seemed an appropriate name for this. Some other, less central elements which appear in this factor are "energy" and "abstractness of help."

IV. Hostility. - Most of the high loading items on this factor (negative emotionality, disapproval, coldness, and communicates "wrong") are consistent with an interpretation of "hostility". Two other items which appear, control and nervousness, can be considered further elaborations or qualifications of this basic dimension.

V. Interest in situation and tasks. - Most of the items which appear on this factor indicate involvement and interest in the tasks. However, none of the items specifically indicate interest in the child and his performance. This differentiates it from the mothers' general interest factor. It also seems to give this factor some of the impersonal quality noted for Father Factor III (Geniality). Low negative loadings for requests suggestion and glances at child are consistent with this impression of impersonality, but the substantial loading for explanations to child in Interim Task does not seem to be.

The parent behavior factors found in this study include some which seem distinctly limited to an achievement-related situation (Encouragement of independent achievement efforts, Interest in situation and tasks, and perhaps Direct, simple participation), while others seem to represent more general dimensions of parental behavior. The study by Rosen and D'Andrade (1959) obtained clusters of variables of parent behavior derived from an interaction scoring system similar to that of Bales, used in a problem-solving situation comparable to that in this study. Three clusters

were found, called Warmth, Rejection and Pushing. The first two are very similar to the mother Warmth and father Hostility factors of the present study, while the third appears related to Encouragement of independent achievement efforts.

Several studies which have investigated general aspects of parental behavior with cluster or factor analytic techniques have produced factors similar to one another and to some of those in the present study. Thus factors or clusters representing warmth, affection, or love have been reported by Milton (1958), Crandall and Preston (1955), Roe and Siegelman (1963), and Schaefer and Bayley (1960); and factors representing hostility or rejection have been reported by Schaefer and Bayley (1960) and by Roe and Siegelman (1963). Other relevant dimensions which have been found in various studies include Promotion of independence (Sewell, Mussen and Harris, 1955); Concern for child (Roff, 1949); and Autonomy-control (Schaefer and Bayley, 1960). None of these last three seems to correspond exactly with factors in the present study; all are related but seem more general. Promotion of independence and Autonomy are both probably related to our Encouragement of independent achievement efforts but would relate to behavior beyond the task and achievement domain which defines the latter factor. Similarly, Concern for child is related to our Mother Factor IV, General Interest, but must be considered to apply to the child in all situations, while the interest manifested in the present study was directed to the child working on a series of specific achievement tasks.

Recent attempts have been made to show how factors found in various studies of parental behavior can be located in the same two or three dimensional space. Schaefer (1959) proposes a two-dimensional model with dimensions of love-hostility and autonomy-control. Becker (1964) suggests a three-dimensional model, including warmth-hostility, restrictiveness-

permissiveness, and calm detachment-anxious emotional involvement. It seems probable that the general factors found in the present study could easily be placed within such schemes, but that the factors which refer more specifically to the achievement tasks and the particular situation might require less global approaches.[3]

Correlates of Factors

Factor Intercorrelations. - Factor scores were computed for each factor by the Complete Estimation Method (Harman, 1960, pp. 338-348). Correlations between these scores within each set of factors (mothers' and fathers') and across the two sets are presented in Table 3. The

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Insert Table 3 about here

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correlations are generally higher within than across sets. For mothers of boys, the highest correlations appear between Factors II (Encouragement of independent achievement efforts) and III (Warmth) and between II and IV (General interest). The correlations for mothers of girls are not significant for either of these pairs of factors, but show a substantial relationship between Factors I (Direct, simple participation) and II, where mothers of boys do not. This seems to indicate a somewhat different quality of encouragement of achievement given by mothers to girls than to boys. For girls, it is aligned with direct participation and a slight element of negativity (part of the participation factor), while for boys it combines with warmth, but not participation. The pattern of relationships between the father factors does not show a similar discrepancy between fathers of boys and fathers of girls. The one difference which occurs is in the correlation between Factor I (Encouragement of independent achievement efforts)

and II (Geniality), which is significant for girls' fathers, but not boys'. This reverses the finding mentioned above for mothers, where warmth and encouragement were related for boys but not girls. All other father factors show moderate intercorrelations, with the exception of Factor IV (Hostility) which relates to nothing else, and V (Interest in tasks) which correlates only with Factors II (General verbal participation) and III (Geniality), the latter possibly because of the common element of impersonality or uninvolvement suggested above for Factors III and V.

Across-sex parent factor correlations are generally smaller than those within sex, and generally manifest closer behavioral relationships for parents of girls than parents of boys. Five of the twenty correlations reach the .05 level of significance for the parents of girls, while only one does for boys' parents.

The differences found in the inter-factor correlations between parents of boys and parents of girls suggests a strong possibility that the factor structure of parental behavior differs according to the sex of the child to whom the behavior is directed. This would seem to be particularly likely for mothers, judging by the present data. The sample size in the present study did not permit us to do separate factor analyses to follow up this possibility, but it would seem an important step to take in future research.

Environmental and child variable correlates. - The relationships of four other variables with each of the parent factors were also investigated; two were environmental variables (family size and apartment condition), and two were child variables (sex and birth order). The measure of family size was the number of siblings of the participating child living in the household. Apartment condition was assessed by ratings made by the two Es

immediately after the family visit. These ratings were each made on five-point scales and involved consideration of age, quality, physical condition and apparent maintenance of the apartment and the furniture. Reliability coefficients for the two teams were .91 (n=35) and .90 (n=29). The apartment score for each family was the sum of the two ratings. Correlations of family size and apartment condition with each of the parent factors are presented in Table 4.

Insert Table 4 about here

Here again, a different pattern emerges for mothers and fathers. Family size relates generally negatively to the various mother factors (although the only significant correlation is with General interest for mothers of boys) and generally positively to the various father factors (significantly for Geniality). Apartment condition relates strongly to three of the four mother factors, particularly for mothers of boys, but relates to none of the father factors.

The relationships found between apartment condition and several of the mother factors for mothers of boys are consistent with results reported by Hess and Shipman (1965) and Walters, Connor and Zunich (1964) which show differences between lower- and middle-class mothers in behavior toward young children in achievement-related tasks. (Social class was not measured directly in the present study, but apartment condition probably represents a fair approximation of this variable.) Hess and Shipman found middle class Negro mothers more likely to praise and show affection to the child, and less likely to criticize the child than lower class Negro mothers. This is similar to our finding of a relationship between apartment condition and maternal Warmth and Encouragement of independent achieve-

ment efforts. Walters, Connor and Zunich obtained their data in an interaction situation with lower-class mothers and children, but derived cross-class comparisons by using results of related studies with middle-class mothers done by Merrill (1946) and Zunich (1961). Middle-class mothers scored higher on contacting, directing, helping, structurizing, lending cooperation, observing attentively, playing interactively, and teaching. These are similar to the task-relevant mother factors which showed relationships with apartment condition in the present study, although from these findings, one would also have expected a relationship to occur with Direct, simple participation, but this was not found.

Both of these prior studies used mothers in interaction with young children of unspecified sex, presumably a combination of both. Thus they both differ from the present study in the age of the child and in the range of sex groupings investigated. It is interesting to note that in the present study only mother factors showed relationships with apartment condition, and this primarily for boys' mothers. While it is possible that behavior toward younger children is less differentiated that it is toward 10 and 11 year olds, it should be pointed out that the relationships which were found strongly for boys' mothers in the present study, also reached significance for the totals (boys and girls combined); if within-sex analyses had not been made, the results might have seemed to apply to both sexes.

The effects of sex and birth order of the child on parental behavior was investigated in a series of two-way analyses of variance. Sex of child showed significant direct effects ($p < .05$) with Mother Factor I (Direct, simple participation) and Father Factor V (Interest in situation and tasks); in each case the factor score was higher when children were

of the same sex as the parent.

Birth order of the child showed no significant direct effects with any of the factors, and one significant ($p < .01$) interaction with sex, for Mother Factor I (Direct, simple participation.) Mothers tended to participate more with first born than later born girls; but more with later born than first born boys (Table 5).

Insert Table 5 about here

The finding that mothers tend to participate more with girls and that fathers tend to show more interest in tasks with boys has no direct empirical precedents in the literature, to our knowledge. Bronfenbrenner (1961) has presented evidence from a self-report study with adolescents that discipline comes mainly from the same-sex parent, and indulgence mainly from the opposite-sex parent. To the degree that variables similar to these are represented in the present study, these results are not confirmed. What may be represented in the present study, is a kind of parental identification with the child of the same sex in the achievement situation, with heightened participation and interest as a result of this identification.

The interaction between child's sex and birth order, affecting mothers' Direct simple participation is a somewhat puzzling finding. It can be compared with results recently reported by Hilton (1966) showing that mothers tended to interfere and work directly on their children's problems with first-born more than with later-born children. This was predicted by Hilton, as one of a set of dependency-producing behaviors. This finding is very similar to what was found in the present study with mothers of girls, but is the opposite of what was found with mothers of boys. In the Hilton study, behavior of mothers toward their four-year-old

children was observed but, while both boys and girls were included, they were not differentiated in the analyses. Thus it is possible that a similar interaction might be found if her data were analyzed in this way. However, her sample was different from the present one in age of children, race, and social class of parents. The discrepancy might be due to any of these factors. An additional finding from the present study may be relevant here. At the beginning of the final, success-failure task each parent was asked to give an estimate of the number of trials he or she expected the child to perform correctly out of the first ten. Mothers gave significantly lower expectancy estimates for first-born girls than for later-born girls, while their estimates for first and later-born boys did not differ. It would appear, then, that mothers give more direct participation to their first-born girls because they consider them as more needful of help; possibly an aspect of the overconcern postulated by Hilton for mothers of first-born children. Why the same relationship does not occur with boys is unclear.

CONCLUSION

One salient outcome of the present study is the recurrently demonstrated influence of sex on other variables, and on relationships between variables. In the first place, the factor structure for mother behavior differed from that for father behavior. While the general elements involved in the two sets of factors remain the same (both, for example, contain both task-oriented and social-emotional or "integrative" factors), the patterning of these elements differs considerably between them. Second, the patterning of relationships between comparable factors differs between mothers and fathers. Third, sex of the child appears to be an important determinant of the relationships between the mother factors

(but not the father factors), and possibly reflects different underlying factor structures. Fourth, relationships between apartment condition and factor scores are conditioned by sex of parent and sex of child. And fifth, the level or score on several of the factors is significantly influenced by the sex of the child. This should underscore the importance of including the various combinations of sex of parent and sex of child in research of this type.

It appears significant to the writers that certain of the behavioral dimensions found in this study are quite comparable to those found in a variety of other studies done mainly with white, middle class parents. It may be presumed that these represent basic and global aspects of parental behavior structurally independent of variations in situation and status. However, the occurrence of other factors in the present study which seem to relate specifically to the situational context and do not closely resemble factors found in other studies gives support to the notion that situation is a significant determinant of factor structure, at least for certain types of factors.

It remains to be seen whether the situation-specific approach for measuring parental behavior utilized in the present study will result in better predictions of children's achievement than those which have been produced in studies using more global approaches.[4] If such proves to be the case, it will be a strong argument for greater situational specificity and appropriateness, not only in research on parental behaviors relevant to achievement, but also in investigations of parental determinants of other systems of child behavior and child personality development.

TABLE 1

MOTHER BEHAVIOR FACTORS (Items Loading ± .30 or Greater)

	Items[b]	I	II	III	IV	h^2
ISS[a]	Nonverbal concrete help	.81				.83
NVI	Manipulates task materials	.77	-.33	.30		.67
ISS	Disagrees	.73				.91
ISS	Negative Feedback	.72				.90
ISS	Gives orientation	.60				.82
NVI	Points	.60				.83
ISS	Verbal concrete incomplete help	.56				.80
GRS	Participation	.51			.45	.85
ISS	Irrelevant or incoherent statement	.50	.30			.62
ISS	Laughter	.42		.42		.75
ISS	Requests orientation	.36	.30			.68
ISS	Gives encouragement		.81			.77
GRS	Encouragement of independence		.80			.83
ISS	Requests suggestion	.36	.77			.83
GRS	Concern with child's understanding		.72			.81
GRS	Concern with quality of performance		.61			.82
ISS	Speaks to the father	.40	.59		-.31	.75
ISS	Agrees		.55			.91
ER	Encouragement ratings total		.54		.30	.87
ISS	Positive feedback		.52			.88
ISS	Gives opinion	.44	.52		-.39	.75
GRS	Understanding		.49	.39		.82
TBR	Disorganized-systematic	-.31	.48			.63

(TABLE 1 continued)

		I	II	III	IV	h^2
NVI	Glances at child		.48	-.40		.69
TBR	Uninformative feedback-informative feedback		.47			.69
GRS	Clarity of communication		.46			.77
NVI	Communicates "wrong"		.37			.42
ISS	Verbal complete concrete help		.34			.74
TBR	Warm-cold			-.81		.82
TBR	Approval-disapproval			-.77		.75
GRS	Positive emotionality			.72		.88
TBR	Use of humor-no use of humor			-.69		.86
GRS	Negative emotionality		.34	-.58	.37	.68
NVI	Smiles	.31		.46		.84
TBR	Rigid-flexible	-.34		.43		.53
NVI	Communicates "right"			.40		.66
IT	Apparent interest				.83	.77
IT	Explanations to child				.69	.85
GRS	Concern with quantity of output				.62	.78
TBR	Permissive-controlling	.39			.58	.79
ISS	Verbal abstract complete help			.55		.76
GRS	Interest in child's performance		.52		.54	.90
GRS	Lethargy-energy				.52	.88
GRS	Interest in situation and tasks				.51	.86
TBR	Dull-energetic				.49	.83
ISS	Verbal abstract incomplete help	.32			.48	.59
ER	Interest ratings total	.30			.47	.82

(TABLE 1 continued)

		I	II	III	IV	h^2
	Remaining Items					
GRS	Nervousness					.38
NVI	Frowns					.72
NVI	Withdrawals					.35
	Percent of common variance -	26	30	21	23	

a. Letters refer to instruments from which items came; ISS = Interaction Scoring System, NVI = Non-verbal Interaction, ER = Experimenter Rating, GRS = Global Rating Scale, TBR = Teacher Behavior Rating Scale, IT = Interim Task Rating.

b. High scores attach to second-mentioned pole of bi-polar items.

TABLE 2

FATHER BEHAVIOR FACTORS (Items Loading ± .30 or Greater)

	Items[b]	I	II	III	IV	V	h^2
GRS[a]	Understanding	.86			-.30		.82
GRS	Encouragement of independence	.80					.76
GRS	Concern with child's understanding	.78		-.31			.80
GRS	Interest in child's performance	.73					.82
GRS	Concern with quality of performance	.71					.87
TBR	Uninformative feedback-informative feedback	.60					.68
ER	Encouragement ratings total	.57	.38				.88
TBR	Rigid-flexible	.52			-.31	-.33	.51
GRS	Concern with quantity of output	.42			.33		.77
ISS	Requests orientation		.82				.76
ISS	Negative Feedback		.79				.91
ISS	Gives encouragement		.73				.70
ISS	Verbal concrete incomplete help		.72				.78
ISS	Disagrees		.70				.88
ISS	Positive feedback		.69				.87
ISS	Gives opinion	-.36	.66				.71
ISS	Nonverbal concrete help		.60				.64
ISS	Gives orientation		.60				.72
ISS	Agrees		.60				.85
ISS	Requests suggestion		.60			-.30	.63
NVI	Points		.59				.71
ISS	Verbal complete concrete help		.46	.42			.76

(TABLE 2 continued)

		I	II	III	IV	V	h^2
ISS	Speaks to mother		.40				.68
NVI	Glances at child		.36			-.32	.59
TBR	Use of humor-no use of humor			-.91			.82
NVI	Smiles			.85			.80
ISS	Laughs			.73			.70
GRS	Clarity of communication	.43	-.37	.65			.66
ISS	Verbal abstract complete help			.59			.69
TBR	Dull-energetic			.54			.87
GRS	Participation		.33	.53			.91
GRS	Positive emotionality			.50	-.38	.32	.82
GRS	Lethargy-energy	.31		.49			.85
ISS	Verbal abstract incomplete help			.40			.74
NVI	Communicates "right"	.33		.34			.56
GRS	Negative emotionality				.87		.85
TBR	Approval-disapproval				.78		.76
TBR	Warm-cold			-.31	.67		.79
TBR	Permissive-controlling			.40	.56		.80
GRS	Nervousness	-.31	.30		.46		.61
NVI	Communicates "wrong"				.34		.72
NVI	Withdrawals			.35		-.65	.58
NVI	Manipulates task materials			.39		.63	.79
ISS	Irrelevant or incoherent statement					.60	.68
TBR	Disorganized-systematic	.53				-.56	.74
ER	Interest ratings total					.55	.81
GRS	Interest in situation and tasks					.53	.88

(TABLE 2 continued)

		I	II	III	IV	V	h^2
IT	Explanations to child	.51				.53	.81
IT	Apparent interest	.42	-.38			.53	.80
	Remaining Item						
NVI	Frowns						.62
	Percent of common variance -	24	27	21	14	15	

a. Letters refer to instruments from which items came; ISS = Interaction Scoring System, NVI = Nonverbal Interaction, ER = Experimenter Rating, GRS = Global Rating Scale, TBR = Teacher Behavior Rating Scale, IT = Interim Task Rating.

b. High scores attach to second-mentioned pole of bi-polar items.

TABLE 3

PARENT FACTOR SCORE INTERCORRELATIONS

		Mothers				Fathers				
		I	II	III	IV	I	II	III	IV	V
Mother Factors										
I: Direct, simple participation	Girls									
	Boys									
	Total									
II: Encouragement of independent achievement efforts	Girls	.57**								
	Boys	.22								
	Total	.46**								
III. Warmth	Girls	.14	.29							
	Boys	.06	.63**							
	Total	.10	.46**							
IV: General interest	Girls	.43*	.33	.28						
	Boys	.46**	.67**	.33*						
	Total	.42**	.48**	.31**						

(TABLE 3 continued)

Father Factors		Mothers I	Mothers II	Mothers III	Mothers IV	Fathers I	Fathers II	Fathers III	Fathers IV	Fathers V
I: Encouragement of independent achievement efforts	Girls	-.13	.15	.35*	.15					
	Boys	-.07	.41**	.20	.15					
	Total	-.15	.24*	.25*	.14					
II: General verbal participation	Girls	-.04	.34*	.12	-.17	.42*				
	Boys	-.20	.02	-.18	-.14	.42**				
	Total	-.15	.12	-.07	-.15	.44				
III: Geniality	Girls	.01	.36*	.37*	.18	.55**	.51**			
	Boys	-.22	.07	.18	-.11	.24	.47**			
	Total	-.11	.19	.25*	.03	.41**	.50**			
IV: Hostility	Girls	-.37*	-.13	-.08	-.26	.04	.31	-.10		
	Boys	.16	.00	-.18	.16	.00	.19	.02		
	Total	-.21	-.09	-.14	.06	.05	.25*	-.02		
V: Interest in situation and tasks	Girls	-.05	.17	.24	.09	.32	.45**	.44**	.00	
	Boys	-.03	.12	.22	.03	.14	.52**	.49**	.14	
	Total	-.11	.10	.21	.05	.27*	.51**	.49**	.09	

Ns: Boys = 38 families Girls = 34 families Total = 72 families * $p < .05$ ** $p < .01$

TABLE 4

CORRELATIONS BETWEEN ENVIRONMENTAL VARIABLES

AND PARENT FACTOR SCORES

	Family Size			Apartment Condition		
	Girls' Families	Boys' Families	Total	Girls' Families	Boys' Families	Total
Mother Factors	(N=34)	(N=38)	(N=72)	(N=34)	(N=38)	(N=72)
I: Direct, simple participation	-.10	-.17	-.10	.00	.23	.10
II: Encouragement of independent achievement efforts	.00	-.08	-.03	.18	.48**	.34**
III: Warmth	-.22	-.07	-.14	.11	.42**	.30**
IV: General interest	-.12	-.37*	-.23*	.43*	.51**	.47**
Father Factors						
I: Encouragement of independent achievement efforts	.07	.12	.08	.10	.25	.16
II: General verbal participation	.16	.12	.12	-.13	-.07	-.11
III: Geniality	.29	.21	.24*	.12	.15	.12
IV: Hostility	-.22	-.06	-.15	.01	-.08	-.05
V: Interest in situation and tasks	.03	.11	.06	.21	-.02	.05
Apartment condition	-.24	-.45**	-.34**			

* $p < .05$

** $p < .01$

TABLE 5

MEAN MOTHER DIRECT PARTICIPATION FACTOR SCORES BY SEX AND BIRTH ORDER OF CHILD

BIRTH ORDER OF CHILD	SEX OF CHILD	
	Girls (n = 34)	Boys (n = 38)
1st born (plus only).....	1.17 (n = 7)	-.84 (n = 5)
later born.....	-.02 (n = 27)	-.24 (n = 33)

Footnotes

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1. This was a geometric figure-grouping task, arranged so that the child failed seven, five, and three trials respectively in the three successive blocks. The situation, designed to examine parental feedback, was set up so that parents could not see the stimuli or the child's solution, but were given information about his "success" or "failure" after each trial. Because the purpose and structure of this task were distinct it constituted a separate study and therefore the verbal and nonverbal interaction scores from it were not included in the analyses reported in this paper. The global behavior ratings, referring to the total session, inevitably reflect behavior produced during this task, in addition to the others.

2. An initial attempt was made to derive a common set of factors for both mothers and fathers by factor-analyzing a mean covariance matrix. The relative contribution of mothers and fathers to the factors produced

was found to be significantly different, indicating different underlying factor structures. It was concluded that separate factor analyses would be more appropriate.

3. The studies mentioned in this section used several techniques, including observers' ratings of behavior, retrospective interviews with mothers and retrospective questionnaire ratings made by children. They also refer to behavior directed to children of varying ages and usually both sexes (but sometimes not differentiated.) Most of them refer to maternal behavior only. The fact that certain dimensions emerge consistently in spite of these differences adds support to the notion that these dimensions are basic elements of parental behavior. It does not, of course, argue against the supposition that other, less basic dimensions are more dependent on situational variations.

4. Relationships of these parental behavior dimensions to children's achievement will be presented in a subsequent report.

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